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But the destruction of the Lemmings after reaching the lowlands is only in small part due to these enemies. "The most active factor in their extermination," says Dr. Collett, "appears to be infectious diseases, which invariably occur whenever a species of animal has multiplied in excess of its natural numbers."

Not only do the Lemmings themselves die of disease; but they are believed to cause serious disease among the human population. This belief has been current in Norway from time immemorial and was published by Ziegler more than 350 years ago. Dr. Collett states that during Lemming years all running water is contaminated by the decaying excrement. "To this may be added the dead animals, which will be found lying scattered about in great numbers, and which, during hot summers, become quickly decomposed. The rain carries the putrid matter on to the nearest watercourse, whence it makes its way to wells, and becomes mixed with the drinking water of the inhabitants.

"During some great prolific years, definite forms of sickness have appeared in certain of the overrun districts, and the people have given these the name of 'Lemming Fever,' as they presumed that they were connected with the appearance of these animals."

After citing medical testimony and describing the disease, Dr. Collett concludes: "Lemming fever is thus a disease which, in its phenomena, is related to scarlet fever. Its origin is regarded, both by medical men and the populace, as having a certain connection with the appearance of the swarms of Lemmings and the pollution of water by their putrifying carcasses and dung during dry summers."

Dr. Collett's treatise on the *Habits and Migrations of the Lemming in Norway* is replete with interest from beginning to end and must long remain the standard authority on the subject.

C. H. M.

#### NOTES AND NEWS.

##### ASTRONOMY.

THE London *Times* gives the following accounts of recent lectures before the Royal Institution and of the last meeting of the British Astronomical Association :

Dr. W. Huggins, F. R. S., gave the second of his course of lectures on the instruments and methods of spectroscopic astronomy, at the Royal Institution, on May 30th. He dealt with the more complex instrument which is placed at the eye-end of the telescope so that the images of the stars fall upon its slit. The important question of its efficiency was connected, the lecturer said, with its power to break up the spectrum into as many parts as possible. This power of separation was fixed by certain conditions—the linear length of the spectrum, its dispersion, and the resolving power of the prism. The latter, which was independent of dispersive power, was governed by the size of the prism, hence larger prisms have greater resolving power. But the use of larger prisms in astronomical work entailed certain disadvantages, such as increased weight and cost, and difficulty of obtaining glass of uniform quality. It was therefore fortunately possible to get the results of large prisms by passing the beam through several smaller ones, though the loss of light by absorption and reflection from the faces of the prisms was very serious. An alternative way of obtaining a spectrum was to use a diffraction grating, which we owed to the experiments Fraunhofer made to discover whether the lines of the spectrum were due to interference of light. His original gratings were made by winding wire in a screw-thread round a piece of glass; ultimately he adopted the plan of ruling the lines on glass with a diamond point. Great advances were made by Rutherford, whose machine cut lines to the number of 17,000 to an inch, and by Rowland. There is, however, but little to choose

between a prism and a grating with 14,000 lines to the inch.

THE Friday evening discourse at the Royal Institution on May 31st was given by the Earl of Rosse, who took as his subject the 'Radiant Heat from the Moon during the progress of an Eclipse.' Sir Frederick Abel was in the chair, and among those present were Lord Kelvin, Sir James Crichton-Browne, Sir Frederick Bramwell, Professor Dewar, Mr. C. V. Boys, Dr. Frankland, Mr. Ludwig Mond and Mr. Crookes. Lord Rosse began by showing the results of his observations on the variations in the amount of heat radiation from the moon during the lunar month. Speaking of the heat given off during an eclipse, he said that in the total eclipse of January, 1888, he had found there was a great decrease in its amount some time before the first contact. During the total phase the heat radiated was a mere trifle, and it had not regained more than 80 per cent. at full moon—an hour and a half after the last contact. Lord Rosse then described the apparatus he had used, and also the apparatus and some of the results of other investigators.

THE usual monthly meeting of the British Astronomical Association was held at University College on May 28th, Mr. E. W. Maunder, the president, being in the chair. A paper was read from Professor H. H. Turner, Savilian Professor of Astronomy at Oxford, on 'Simple Apparatus for Measuring Stellar Photographs.' Mr. Holmes read a paper on 'The Reproductions of Astronomical Drawings,' etc., in which the value of photographic processes was commented on as being more accurate. He also read a paper on the apparent roundness of small spot markings on planets. A paper from Mr. Monck on the 'Spectra and Colours of Stars' was read. The report of the Lunar Section, by Mr. T. Gwyn Elger, F. R. A. S., the director, was read, and at-

tention was called to the progress made recently in lunar photography.

#### GENERAL.

PROFESSOR C. LLOYD MORGAN, author of *Animal Life and Intelligence* and other works upon comparative psychology, is coming to this country next winter to deliver one of the Lowell Institute courses in Boston. He will also deliver four lectures upon Instinct in the Columbia Biological Course.

FIELD exploration in vertebrate palaeontology is increasing very rapidly, and this summer a large number of parties will be in the field. The American Museum expedition to the Uinta Basin entered the field in March, accompanied by Mr. J. B. Hatcher, representing the Princeton Museum. On June 1st Dr. J. L. Wortman takes charge of the American Museum party, which will include four collectors. The University of Kansas will send three parties into the fossil beds of Kansas, Dakota and Wyoming. The University of Nebraska will also send a party under the direction of Prof. Barbour. Prof. Baur, of the University of Chicago, announces a field expedition as a regular part of the University curriculum.

THE Royal Academy of Sciences of the Institute of Bologna offers a gold medal of the value of 1,000 francs for a memoir which either from the chemical, physical or mechanical point of view will indicate a practical system or new apparatus for the prevention or extinction of fire. The essays may be written in Italian, French or Latin. Those in other languages must be accompanied by an Italian translation. The essays are to be signed with a *nom de plume* and to be accompanied by an envelope containing the author's real name. All essays must be in before May 29, 1896, and should be addressed: "Al Segretario della R. Accademia delle Scienze dell' Instituto di Bologna."

THE Trustees of the British Museum have issued a Catalogue of Additions to the Manuscripts in the years 1888-1893. The catalogue is provided with a serviceable index. They have also published a translation of the Papyrus of Ani which contains the most complete text of the famous Egyptian Book of the Dead. The translation, which is accompanied by a valuable introduction, is from the pen of Mr. E. A. Wallis Budge.

ANOTHER Egyptian publication of importance is from the press of Brill, at Leiden, and contains fac similes and descriptions of a papyrus (F. T. 71 So-am-tra) devoted to mortuary customs.

MR. M. A. MACKENZIE, of Trinity University, Toronto, has been appointed professor of mathematics in place of the Rev. Dr. Jones, who has accepted the position of bursar in the same institution.

PROFESSOR FRANKLAND has been elected a foreign associate of the *Académie des Sciences*. The vacancy was caused by the death of M. van Beneden.

APPLICATIONS for the position of lecturer in Chemistry in the university of Toronto should be sent to the Canadian Minister of Education before August 15th. The initial salary will be \$1,000, increasing by annual increments of \$100 until it reaches \$1,800. The duties of the lecturer will be to assist the demonstrator in the superintendence of the laboratories under the direction of the professor of chemistry, and also to deliver such lectures on physiological, organic and inorganic chemistry as may be assigned to him by the professor.

*The Lancet* announces the following foreign medical appointments: At Erlangen—Dr. G. Hauser has been promoted to the chair of general and anatomical pathology, vacant by the retirement of Dr. von Zenker. At Gratz—Drs. Drasch and Jariusch have been promoted to professorships

of histology and dermatology, respectively. At Oporto—Dr. I. do Valle, Professor of General Pathology, has been appointed to succeed Dr. Carlos Lopez in the chair of *materia medica*, Dr. Maximiano de Lemos taking the chair of general pathology.

At Berlin, Dr. Ferdinand Karsch and Dr. Anton Reichenow have been made professors in the Zoölogical Museum, Dr. Victor Kremser in the Meteorological Institute, and Dr. A. Börsch in the Geodetic Institute.

At the anniversary meeting of the Royal Geographical Society of London, Mr. Clements R. Markham was elected President for 1895-6. Mr. W. T. Blanford, the Hon. G. C. Brodrick, the Hon. George Curzon, Sir George Taubman Goldie, General R. Strachey and Rear-Admiral W. J. L. Wharton were elected Vice-Presidents.

DANIEL KIRKWOOD, professor of mathematics in Indiana State University, died at Riverside, Cal., on June 11th, at the age of eighty-one. He retired from the active duties of the professorship in 1856.

THE chair of physics in the University of California, recently filled by the late Professor Harold Whiting, has been offered to Mr. Exum Percival Lewis, Ph. D., of Johns Hopkins University.

At a meeting of the Royal Botanical Society on May 31st Professor George Henslow delivered a lecture on 'A Century of Progress in Floriculture.' He exhibited specimens of the original wild plants from which some of our most admired garden flowers have been developed, illustrating with numerous diagrams the various stages in the way of cultivation and hybridization through which they passed before reaching the perfection of to-day.

FLOOD & VINCENT (Chautauqua Press), of Meadville, Penna., announce the appearance of 'Thinking, Feeling, Doing,' a popular exposition of experimental psychology

by E. W. Scripture, of Yale University. The book contains one colored plate and over 200 illustrations; it has a voluminous index.

ACCORDING to the *Evening Post* Professor Fabian Franklin has resigned his Professorship of Mathematics in Johns Hopkins University in order to become editor of the *Baltimore Evening News*.

THE American Medical College Association in Baltimore has decided by a vote of 29 to 5 that a four years' course of study shall be demanded of all students henceforth matriculating in institutions belonging to this organization.

AT the graduating exercises of Johns Hopkins University on June 13th the degree of Ph. D. was conferred on 46 candidates, distributed among the different departments as follows: History and economics 12, chemistry 12, geology 3, German 2, English 3, physics 4, Romance 3, Latin and Greek 5, biology, mathematics and astronomy, each 1.

BARNARD COLLEGE has purchased for \$160,000 a site on Cathedral Heights, adjacent to that of Columbia College. The sum of \$200,000 has been subscribed towards the new buildings.

ON January 18th the great seismograph at the Osservatorio del Collegio Romano at Rome registered five complete pulsations of slow period characteristic of earthquakes originating at a great distance. They commenced at 4h. 37m. 30s. p. m. (Greenwich mean time), and lasted 1m. 22s., giving an average duration of 16.4 seconds for each pulsation. On the same day a severe earthquake was felt along the east coast of Japan, and was recorded at Tokio at 3h. 48m. 24s. The distance between this place and Rome being about 9,500 km., the pulsations must have traveled with an average velocity of 3.2 km. per second (see *Nature*, vol. 1, pp. 450-51; vol.

li., p. 462). At Nicolaiew and Charkow, in the south of Russia, the horizontal pendulums were disturbed for nearly an hour, the epoch of maximum amplitude occurring a few minutes earlier than at Rome.—*Nature*.

MESSRS. MACMILLAN & Co. will shortly publish an *Introduction to the Study of Seaweeds*, with illustrations, by Mr. George Murray, the newly appointed Keeper of Botany in the Natural History Department of the British Museum.

IT is announced that Professor Albert S. Bickmore, of the Museum of Natural History, New York, will deliver the address at the laying of the corner-stone of Butterfield Museum, Dartmouth College. It is hoped that the museum, which will cost about \$60,000, will be ready for occupancy in the latter part of 1896.

ARRANGEMENTS for an accurate map of Africa will be made at the International Geographical Congress which is about to meet in London. It is expected that Great Britain, France, Germany, Belgium, Italy and Portugal, being the powers chiefly interested, will divide the expenses of the map.

THE Naturalists' Directory published by S. E. Cassino, Boston, for 1895, contains the names of 5,747 naturalists of the United States and Canada arranged in alphabetical order, giving under each name the specialty studied and the address. The names are also arranged by subjects and geographically by States. The directory contains 382 pages, and is neatly bound in cloth. The price is \$2.50.

THE following appointments have been made in Cornell University: Virgil Snyder Ph. D. (Göttingen) has been appointed instructor in mathematics; Darwin A. Mortant, assistant in chemistry; W. K. Hatt (assistant professor at Purdue University) and John Hayfold, instructors in civil engineering; Elias J. Durand, assistant in

cryptogamic botany, and H. H. Denham, instructor in chemistry.

THE Cambridge Scientific Instrument Company (Limited) has been formed with a capital of £10,000, in £5 shares. Its objects are to acquire the business carried on at Cambridge by Mr. Horace Darwin as 'The Cambridge Scientific Instrument Company,' and to adopt an agreement for the purpose, and to carry on the business of mechanical and electrical engineers, and scientific instrument and apparatus manufacturers. The first directors are Mr. Horace Darwin (chairman and managing director), Major Leonard Darwin, Mr. Hugh F. Newall and Mr. William N. Shaw. The remuneration of the directors will be fixed by the company.

DR. ALBERT MANN has been appointed professor of biology in Ohio Wesleyan University.

IN Syracuse University Dr. E. C. Quereau has been appointed professor of geology and mineralogy, and Dr. W. H. Metzler associate professor of mathematics.

DR. W. L. ABBOTT has sent to the U. S. National Museum the collections made during his travels in Pamir, Central Asia. Among these are the skins of 228 birds and more than 100 mammals, many of which are said to be new to science.

AN editorial article in *Garden and Forest* for May 29th contains an appeal for a fitting memorial to Andrew Jackson Downing. From it we may quote the following facts:

"Mr. Downing was an authoritative writer on the art of landscape-gardening. His treatise on the *Theory and Practice of Landscape-Gardening*, published in 1841, became at once the accepted text-book of the subject. In 1849 he wrote a series of articles in *The Horticulturalist* on public parks which had a marked influence in creating and molding public sentiment in this direction. The actual work of constructing Central

Park was not begun until six years after Downing's untimely death, but it was his stirring appeals that aroused the city to feel its need, and provision to meet it quickly followed. It is not too much to say that Downing takes rank among the greatest benefactors to his country which this century has produced. It is now more than forty years since his death, and it is surely time that some memorial of him should be erected in the park which his genius secured for the city of New York."

THE last number Vol. VII., No. 4, of the Journal of the College of Science of the Imperial University of Japan bears witness, as the preceding numbers have done, to the aptitudes of the Japanese for exact research. The number contains eight short contributions to chemistry and an account of the earthquake of June 20th, 1894. This was the most violent earthquake that has occurred in Tokyo since 1855.

A WORK on electricity and magnetism by Professor Francis E. Nipher, Washington University, St. Louis, will be published during the summer.

THE State Agricultural College at Corvallis, Ore., has begun the publication of a series of laboratory studies in zoölogy edited by Prof. F. L. Washburn.

THE paper on the Proto-historic Ethnography of Western Asia, read by Dr. D. G. Brinton before the American Philosophical Society on April 19th, has been reprinted from the Proceedings of the American Philosophical Society and is published by MacCalla & Co., Philadelphia.

DR. J. DÖRFER, I. Burgring 7, Vienna, is compiling a *Directory of Living Botanists*, together with botanical gardens, societies, journals, etc. The coöperation of botanists throughout the world is requested.

At the annual meeting of the Linnaean Society, held on May 24th, the gold medal founded in 1888 on the occasion of the cen-

tenary of the Society, and awarded alternately to a biologist and zoölogist, was presented to Dr. Ferdinand Cohn, professor of botany in Breslau. Last year the medal was awarded to Professor Haeckel, of Jena, in recognition of his researches in the science of marine invertebrate zoölogy.

THE third International Congress of Physiology will meet in Berne from Sept. 9th to Sept. 13th, 1895.

ACCORDING to the *Revue Scientifique* M. Tocchini, the director of the Central Bureau of Meteorology in Rome, has founded a Seismological Society, having for its object the study of earthquakes and volcanic phenomena, and the publication of short accounts of the results obtained and of the apparatus used.

The *Revue Scientifique* also reports the formation of an Astronomical Society in Bruxelles, with the object of bringing into closer communication all those interested in astronomy and related sciences.

Two hundred unprinted letters of Pestalozzi have been found in Switzerland. They will be published by Seyffarth, whose biography of Pestalozzi has already reached its sixth edition.—*N. Y. Evening Post*.

HENRY PHILIPS, JR., died in Philadelphia on June 6th, at the age of 57. Mr. Philips was well known as an archaeologist, numismatist and philologist.

THE University of Glasgow has received an anonymous gift of £10,000 for the purpose of founding a chair of political economy to be named after Adam Smith, who was once professor in the University.

THE honorary degree of Doctor of Science has been conferred by the University of Cambridge on Dr. John Murray, editor of the 'Challenger' publications.

THE following recent appointments to assistant professorships are announced from Johns Hopkins University: Dr. Charles Lane Poor, astromony; Dr. Sidney Sher-

wood, political economy; Dr. Alexander S. Chessin, mathematics and mechanics; Dr. John M. Vincent, history; Dr. Simon Flexner, Pathology. Dr. Edward B. Matthews and Herbert G. Geer have been appointed associates in mineralogy and mechanical engineering respectively.

AN International Horticultural Congress was opened at Paris on May 24th.

THE *Institut* of France has opened an international subscription for a moument to Lavoisier, to be erected in Paris.

MR. RALPH SWINBURNE, said to have been the oldest engineer in the country, died recently, aged ninety years.

MR. L. L. PRICE's paper on 'The Colleges of Oxford and Agricultural Depres-  
sion' contains, according to the *Academy*, "a detailed analysis of the expenditure of the colleges in 1883 and 1893. During this period the amount received by the heads (excluding Christ Church) has fallen from £22,811 to £20,905, or by more than 8 per cent.; in some cases, of course, the decrease is much more, while in a few there is an increase. The amount received by fellows (apparently including professor-fellows) has fallen from £70,980 to £59,715, or by more than 15 per cent. Here, again, there are wide variations, though only two examples of actual increase. In the case of one college, which shall be nameless, eight fellows in 1893 had only £400 to divide among them. On the other hand, the amount appropriated to scholarships and exhibitions has risen during the same period from £44-776 to £48,378, or by nearly 10 per cent. In hardly any case is there a decline; while at the unnamed college referred to above the scholars now receive nearly four times as much as the fellows. The number of scholars and exhibitors has risen from 570 to 658, while the number of fellows seems to have remained stationary. In addition, the colleges in 1893 paid over an assess-

ment of £4,334 to the common university fund, a heading which practically did not exist in 1883; while during these ten years contributions to the salaries of the professoriate have increased from £12,840 to £15,034. It seems pretty clear that the results of agricultural depression have fallen almost solely upon the fellows, and upon some of them hardly."

PROFESSOR BUNSEN celebrated his eighty-fifth birthday on March 31st.

AT the last meeting of the Geological Society, Prof. Judd drew attention to an interesting series of photographs sent for exhibition by Prof. Liversidge, of Sydney, who has found that sections of gold nuggets, when etched with chlorine-water, exhibit lines like the Widman-Stetten figures of meteorites, showing that the gold has a crystalline structure, octahedral and cubic forms being displayed.—*The Academy.*

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#### SOCIETIES AND ACADEMIES.

##### BIOLOGICAL SOCIETY OF WASHINGTON.

AT the meeting held May 18th Dr. Merriam spoke of the Mammals of the Pribilof Islands in Bering Sea. Excluding Cetaceans, eight mammals are known from the Islands. Four of these are land mammals and four amphibious or marine, as follows: One, Arctic fox; two, brown lemming; three, shrew; four, house mouse; five, harbor seal; six, fur seal; seven, sea-lion; eight, walrus. To these the sea-otter might be added, though it is not a resident and visits the islands very rarely. The house mouse was introduced by the Russians and has run wild. The fox also is said to have been introduced. The shrew has been found on St. Paul only; the lemming on St. George only.

A paper entitled 'The Hares (genus *Lepus*) of the Mexican Border' was read by Dr. Edgar A. Mearns, who stated that it was written in the course of preparation of

a report on the collections made by the biological section of the recent re-survey of the Mexican boundary line, of which expedition Dr. Mearns was the surgeon and naturalist from January, 1892, to September, 1894, with one intermission of a few months. The doctor's field experience in that general region covers in all a period of seven years. The specimens of *Lepus* accumulated during that time amount to 288, representing 15 species and subspecies, to which material were added the collections of the United States National Museum and a portion of those of the American Museum of Natural History in New York, making a total of about 400 specimens examined. The species of the Mexican border were shown to represent three sections of the genus *Lepus*, which might with advantage be recognized as subgenera. These were *HYDROLAGUS* Gray (Water Hares, represented by a single species, *Lepus aquaticus* Bachman); *SYLVILAGUS* Gray (comprising (1) the Cottontails, 3 species and 3 additional subspecies, and (2) the Cactus Hare, *Lepus cinerascens* Allen); and *MACROTOLAGUS* (a new subgenus created for the Mexican group of Jackrabbits, of which 6 species and 3 additional subspecies were found on the Mexican border). In all, 17 forms were recognized as occurring on the strip of the United States which borders on Mexico, of which number seven were treated as subspecies and the remainder as species, of which latter there are eleven, *Lepus sylvaticus* being represented by (3) subspecies. Two species and four subspecies were described as new. Of these, Holzner's Cottontail inhabits wooded mountains from New Mexico and Arizona southward, and the Lesser Desert Cottontail the region from the upper Rio Grande of Texas westward to the continental divide. The black-naped Jackrabbit of the Lower Rio Grande was named in honor of Dr. C. Hart Merriam; and another species of Jackrabbit from the